

Name:  
Date:  
Period:  
DO NOW:

What are the first five terms of a geometric sequence that begins with 3 and has a common ratio of 2?

- A 3, 6, 12, 24, 48.
- B 3, 6, 9, 12, 15.
- C 3, 5, 7, 9, 11.
- D 3, 4, 5, 6, 7.

### Arithmetic Sequences

In an arithmetic sequence, each succeeding term differs from the preceding term by the same number.

In an arithmetic sequence, the difference between two subsequent terms is known as the common difference.

The  $n^{\text{th}}$  term of an arithmetic sequence can be calculated by the formula:

$$a_n = a^1 + (n-1)d$$

where:

$n$  = the number of terms you want to find

$a^1$  = the first term

$d$  = common difference

Example 1	Arithmetic Sequence	Common Difference
	1, 3, 5, 7, 9, 11, .....	2
	2, 7, 12, 17, 22, 27, .....	5

Example 2

Identify the sixth term of an arithmetic sequence that begins with 5 and common difference is 9.

$$\begin{aligned}
 a_n &= a^1 + (n-1)d \\
 a^6 &= 5 + (6-1)9 \\
 &= 5 + 5 \times 9 \\
 &= 5 + 45 \\
 &= 50
 \end{aligned}$$

Hence, the sixth term is 50.

### Activity

Identify the common difference between the terms and complete the sequence.

Sequence	Common Difference
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2, 4, 6, ■ ■ ■ ■ ...	■
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2, 5, 8, ■ ■ ■ ■ ...	■
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5, 13, 21, ■ ■ ■ ■ ...	■
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What is the eighth term of an arithmetic sequence that begins with 6 and has a common difference of 10?

A 66

B 76

C 86

D 96

What is the fifth term of a geometric sequence that begins with 3 and has a common difference of 3?

A 324

B 108

C 36

D 12

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A 3, 6, 12, 24, 48.

B 3, 6, 9, 12, 15.

C 3, 5, 7, 9, 11.

D 3, 4, 5, 6, 7.

What is the tenth term of an arithmetic sequence that begins with 2 and has a common difference of 5?

A 32

B 37

C 42

D 47

What is the common ratio of the geometric sequence -3, 12, -48, 192, -768, .....

- A -3
- B 3
- C -4
- D 4

What is the tenth term of an arithmetic sequence that begins with 2 and has a common difference of 5?

- A 32
- B 37
- C 42
- D 47

What is the common ratio of the geometric sequence -3, 12, -48, 192, -768, .....

- A -3
- B 3
- C -4
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What is the fifth term of a geometric sequence that begins with 3 and has a common difference of 3?

- A 324
- B 108
- C 36
- D 12